

ALGORITHMS, THEORIES AND ONTOLOGY; SPACETIME FROM THE PERSPECTIVE OF STATISTICAL MECHANICS

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ABSTRACT. Relativity and quantum mechanics both claim impressive empirical accuracy and are both considered to be *fundamental* theories, despite being based on very different paradigms. From the perspective of classical statistical mechanics, there are good reasons to suggest that quantum mechanics is more *algorithm* than theory. The addition of a discrete signal to worldlines in special relativity reveals the task that the quantum algorithm accomplishes. It also displays the reason that a linear superposition principle applies to a ‘square root’ of probability density functions. In this view the quantum algorithm is directly linked to spacetime and would *not occur* in a Newtonian world where space and time are independent. It arises as a consequence of Minkowski’s merger of space and time under the additional condition that worldlines have an intrinsic scale at the Compton length.

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